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RAPESEED CRUSHING

AND

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Department of Industry & Commerce,

Edmonton - Alberta

June, 1969.

FOREWORD

The Department of Industry and Tourism has prepared this report in response to requests for information concerning the rapeseed crushing industry. In it has been compiled the major statistical material available on the industry. With the desire to make the report as comprehensive as possible, statistics on all edible fats and oils have been included. It is hoped that this expanded coverage will enable readers to relate the position of rapeseed crushing industry within the larger edible oil industry.

Special thanks are extended to the following individuals, for their co-operation in fulfilling the writer's numerous requests for information.

Dr. B. Weinberg - Edible Oils Section, Agriculture, Fisheries and Food Products Branch, Department of Industry, Trade and Commerce, Ottawa.

Mr. D. F. Alger - Department of Industry, Trade and Commerce, Edmonton.

Mr. J. McAnsh - Executive Director, Rapeseed Association of Canada, Vancouver.

Mr. J. W. Telford - Alberta Freight Bureau, Edmonton.

R. G. Nicoll,
Department of Industry and
Tourism,
Edmonton, Alberta.

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STATUS AND PROSPECTS OF THE CANADIAN RAPESEED CRUSHING INDUSTRY

The following summary of the Canadian Rapeseed Crushing Industry was prepared by Dr. Bernd Weinberg of the Edible Oils Section, Agriculture, Fisheries and Food Products Branch, Canadian Department of Industry, Trade and Commerce.[1]

Total Canadian crushings of rapeseed have now reached the 6 million bushel level (about 300 million pounds), compared with about 1.5 million bushels in 1962. The volume of soybean crushings has remained relatively constant, amounting to close to 200 million bushels (about 1.15 billion pounds) in 1968. Although the total volume of rapeseed crushings remains well behind that of soybeans, its importance and significance can be better judged, when remembering the difference in oil content of these two seeds. Canadian mills produced 192 million pounds of soybean oil and 116 million pounds of rapeseed oil in 1968.

In fact, Canadian edible oil refiners, who account for most of the fully processed fats and oils consumed in Canada, produced 117 million pounds of fully refined rapeseed oil in 1968 and 146 million pounds of soybean oil. Rapeseed oil consumption has increased to nearly 28 per cent of all vegetable oils processed in Canadian refineries.

On the other hand Canadian rapeseed meal production in 1968 amounted to only 83,000 tons compared with 457,000 tons of soybean meal.

All soybeans are being crushed by three relatively large mills in the Toronto-Hamilton area and by one smaller plant in Manitoba. Except for a minor quantity processed in Montreal, all rapeseed is being crushed in four

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[1] Weinberg, B., Unpublished notes, Ottawa, May 14, 1969

relatively small plants in the Prairie Provinces. The principal market for rapeseed oil is in Eastern Canada. Despite the fact that the market potential for rapeseed meal in Western Canada has not yet been realized, at least half the meal is being shipped for consumption in Eastern Canada.

The four western Canadian rapeseed plants have currently an estimated total annual capacity of at least 9 million bushels, and are thus capable of handling a further increase in volume. One Eastern Canadian crusher is equipped to process rapeseed and will start as soon as both, oil and meal, are sufficiently well accepted by their respective customers. The largest markets for oil and meal are in Ontario and Quebec. Current freight rates favour the shipment of seed by water and rail to Eastern Canada over the transport of the oil and meal. This situation is somewhat tempered by the easier access of the Western crusher to his seed supply.

Generally speaking it may be taken for granted that the entrance of an Eastern crusher into rapeseed processing would be based on a minimum of 300 tons per day, i.e. close to four million bushels per year. Eastern crushers regard this size as essential for an economically viable operation. The combined Eastern and Western rapeseed crushing capacity could, therefore, even now process more than twice the current volume of 6 million bushels.

Exports of rapeseed meal or oil have never played a significant role. While the possibility of the expansion of exports of the products must not be ruled out, the crushing industry will continue to regard the domestic market as its main outlet. Based on

1) a continued improvement in the acceptability of rapeseed oil and meal by the edible oil and feed industries, and

2) reasonable crushing margins,

it seems safe to expect that the volume of rapeseed crushing can and will double within the next few years. This will not require a larger number of crushing mills in Western Canada, but rather an increased capacity of individual mills located favorably with regard to the production areas.

INTRODUCTION

Rapeseed is grown mainly in the northern-central region of Alberta and Saskatchewan and in southern Manitoba. The areas of western Canada (shaded) that are adapted to rapeseed production are shown on page 8. In this publication the name rapeseed is applied to Brassica napus (Argentine type) and Brassica campestris (Polish type). Approximately 70 per cent of the Canadian rapeseed acreage is the Polish type (Brassica campestris). The two main varieties of the Polish type are Echo and Arlo while Target, Tanka and Nugget belong to the genus Brassica napus or Argentine rapeseed.

This oilseed when crushed yields 40 per cent oil and 57-58 per cent meal. Through the application of various refining procedures crude rapeseed oil can be converted into margarine base stock, shortening oils, salad and cooking oils. Based on its special fatty acid composition, rapeseed oil has also found a market in some industrial applications, both as an oil and for its acids after hydrolysis. The edible use of rapeseed oil in Canada is about evenly distributed among margarines, shortenings, salad and cooking oils. Some rapeseed oil finds its way into dairy substitute products, such as dessert toppings . The meal according to a Canada Department of Agriculture booklet "is now recognized as an acceptable component of protein supplements for all species of livestock and poultry ..."[1]

The rapeseed crushing industry in western Canada began around the end of the Second World War. The oil, produced in a plant in Moose Jaw, Saskatchewan, was shipped to the United States and Europe

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[1] Bell, J. M., and Downey, R. K., Welter, L. R., "Oil and Meal from Canadian Rapeseed", Canada Department of Agriculture, Catalogue No. A 53-1183, Queen's Printer, Ottawa, 1968

as there was little or no domestic demand. As the European countries rebuilt after the Second World War, their agricultural products were given government subsidies, with the result that Canadian producers found it impossible to market their oil in Europe. Although the plant in Moose Jaw ceased operations in the early 1950's, today there are rapeseed crushing plants in Altona, Manitoba; Saskatoon and Nipawin, Saskatchewan; and Lethbridge, Alberta.

PRODUCTION OF RAPESEED IN ALBERTA

In 1969 Alberta produced 14.8 million bushels of rapeseed. This represented an increase of 6.8 million bushels from the 1968 production of 7.2 million bushels. The total Canadian production rose from 19.4 million bushels in 1968 to 37.1 million bushels in 1969. Coupled with the actual increase in production Alberta's relative share of total production also increased from 37 per cent in 1968 to 38 per cent in 1969. Area, yield and production of rapeseed for Alberta and western Canada are shown on Table 1 and 2.

Rapeseed is grown in two general areas of Alberta, the Peace River district and the central region. The areas of western Canada that are adapted to rapeseed production are shown in Fig. 1. Statistics on rapeseed production in Alberta have been provided by the provincial Department of Agriculture. The Department of Agriculture has consolidated rapeseed production figures from each agricultural reporting area (A.R.A.) into three regions. The first region is comprised of ARA 1-3 and covers the southern portion of Alberta, the second region ARA 4-6 extends across Alberta from just above Drumheller in the south to the northern provincial boundary in the east. The third region ARA 7 include the Peace River district. The boundaries of each region are shown on Fig. 2.

Of the three districts the ARA 4-6 produces the largest amount of rapeseed, 54 per cent, followed closely by the ARA 7, with 31 per cent. The third region ARA 1-3 accounts for approximately 15 per cent of Alberta production of rapeseed. Statistics on rapeseed acreage taken from the 1966

Census of Canada show that Census Division 15 had the largest acreage of rapeseed, followed by Census Divisions 13 and 10.

Canada's production of rapeseed has made her the world's largest exporter of rapeseed, with exports amounting to 362,000 tons in 1968. While the total amount of rapeseed exported is increasing, the number of countries Canada exports to has been decreasing. Japan, our major customer, purchased 77 per cent of the total amount of rapeseed exported in 1968. The European markets for Canadian rapeseed have been declining as the Common Market countries are promoting the growing, crushing and refining of rapeseed within their own countries by subsidising their farmers. The presence of a domestic crushing and refining industry, is important to western Canada as it provides a relatively stable market for rapeseed.

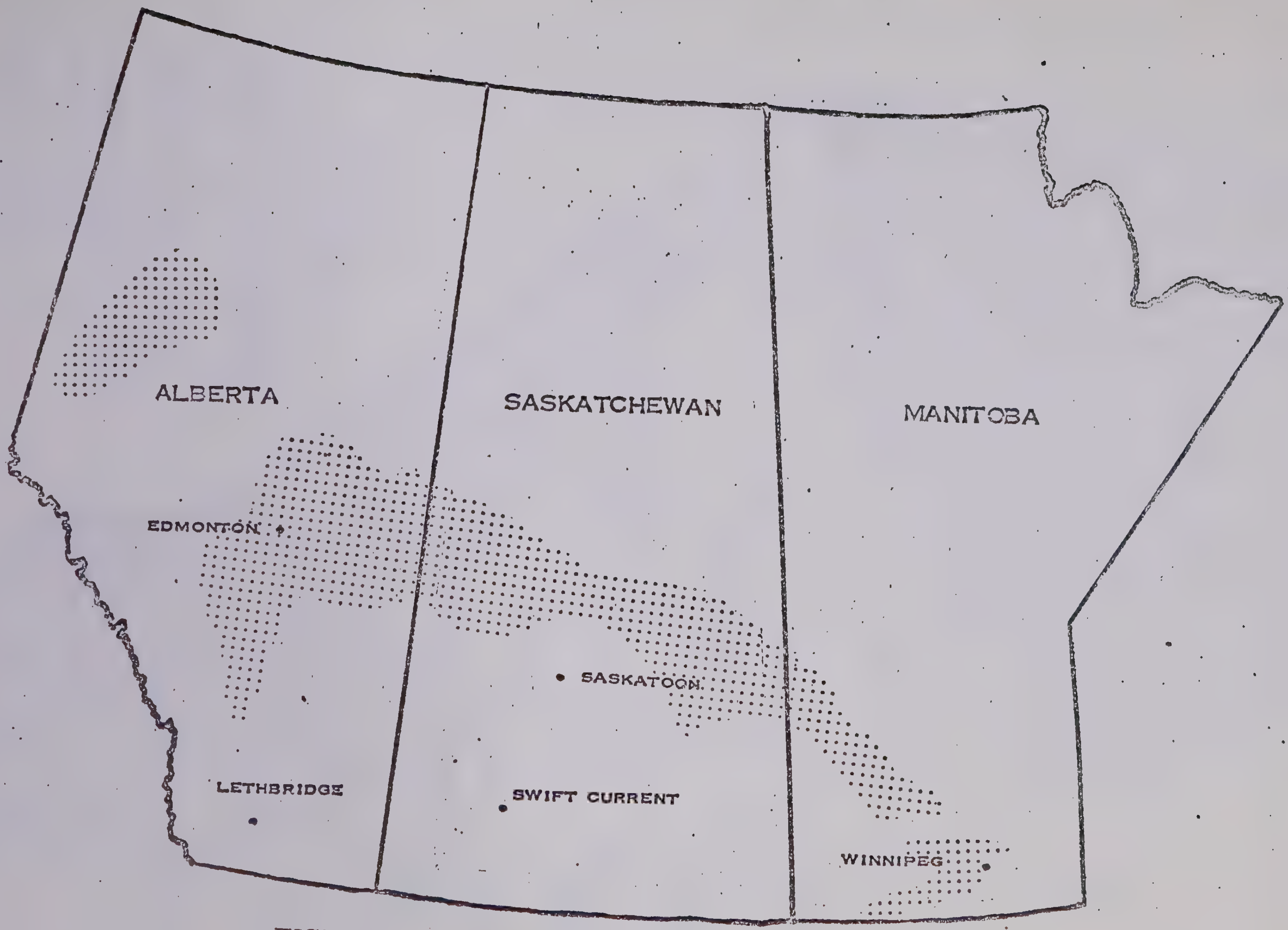

FIGURE 1. Areas in Western Canada that are best suited to rapeseed production.

Adapted from a map prepared by
"Rapeseed Association of Canada"

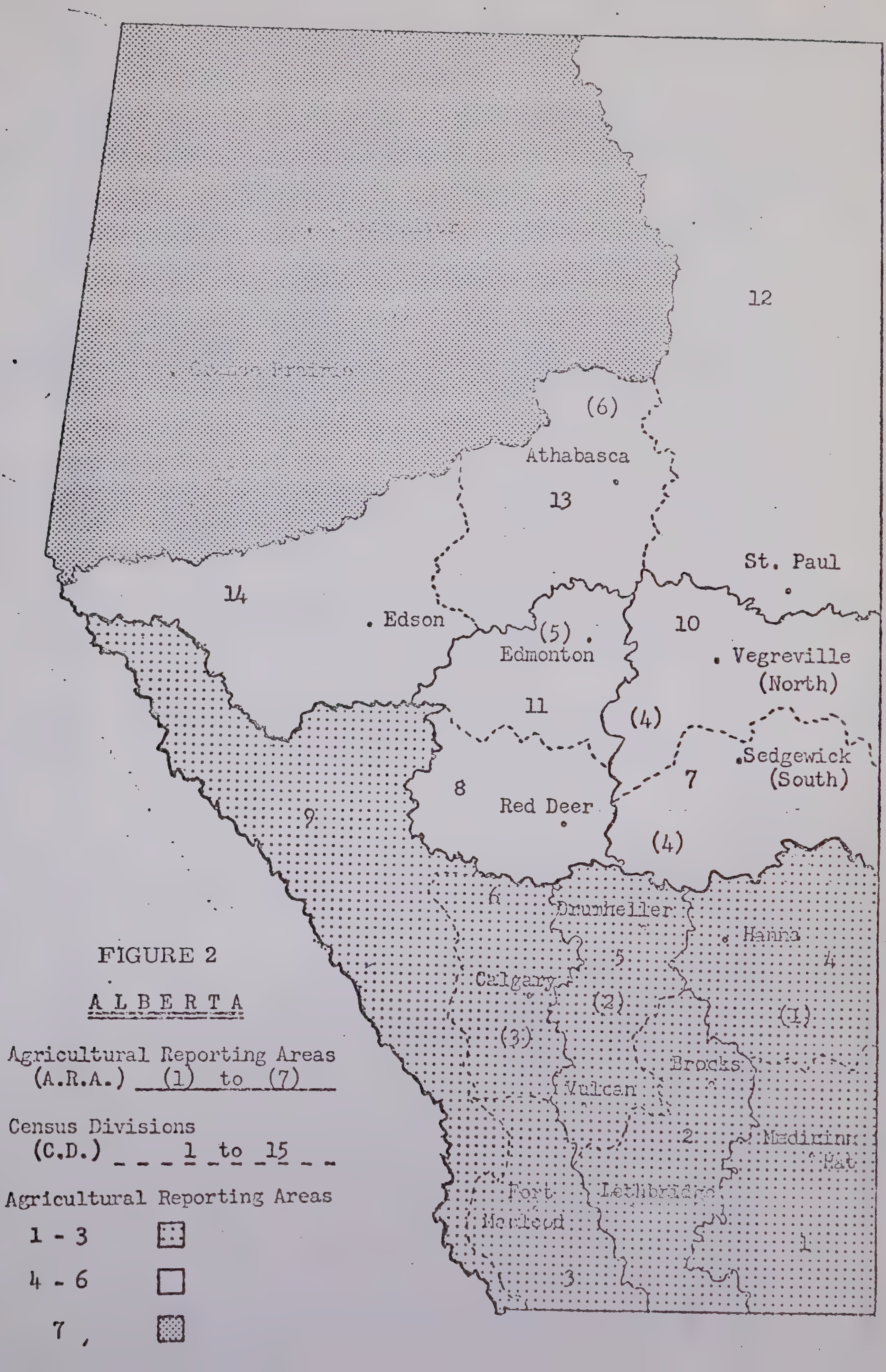

FIGURE 2

ALBERTA

Agricultural Reporting Areas
(A.R.A.) (1) to (7)

Census Divisions
(C.D.) 1 to 15

Agricultural Reporting Areas

1 - 3	⬚
4 - 6	☐
7	▨

Table 1.

ACREAGE, YIELD AND PRODUCTION OF RAPESEED IN ALBERTA

	AGRICULTURAL REPORTING AREAS (A. R. A.)								
	A. R. A. 1-3			A. R. A. 4-6			A. R. A. 7		
	Area '000 acres	Yield bu./acre	Production '000 bu.	Area '000 acres	Yield bu./acre	Production '000 bu.	Area '000 acres	Yield bu./acre	Production '000 bu.
1959	2.1	15.4	32.3	11.3	15.9	213.6	17.4	11.8	205.3
1960	33.1	13.1	433.6	42.4	19.3	818.3	94.5	12.1	1,143.4
1961	76.6	16.0	1,225.6	72.8	19.9	1,448.7	157.6	16.6	2,616.2
1962	23.0	14.3	328.9	47.9	19.3	924.4	101.1	13.8	1,395.2
1963	12.1	23.2	280.7	80.4	24.2	1,945.7	130.5	10.3	1,344.2
1964	22.8	18.0	410.4	132.9	19.2	2,551.7	248.3	14.1	3,501.0
1965	44.3	19.5	863.9	246.0	17.7	4,354.2	444.7	9.1	4,046.3
1966	52.8	23.2	1,225.0	280.0	19.1	5,348.0	290.3	14.0	4,064.2
1967	79.3	16.7	1,324.3	391.0	17.9	6,995.9	404.0	10.0	4,040.0
1968	36.8	22.3	820.6	213.0	16.1	3,429.3	199.9	13.9	2,778.6
1969	100.4	20.9	2,098.4	388.0	19.3	7,488.4	327.6	13.4	4,389.8

Source: Department of Agriculture, Province of Alberta.

Table 2.

ACREAGE, YIELD AND PRODUCTION OF RAPESEED IN WESTERN CANADA

Province	Acreage '000 Acres	Yield per Acre Bushels	Production '000 Bushels
ALBERTA			
1964	404	16.0	6,460
1965	735	12.9	9,500
1966	610	18.0	11,000
1967	875	13.9	12,200
1968	450	16.0	7,200
1969(1)	816	17.2	14,000
SASKATCHEWAN			
1964	303	17.5	5,300
1965	555	19.2	10,700
1966	620	20.0	12,400
1967	600	17.0	10,200
1968	511	20.2	10,300
1969 (1)	1,000	19.6	19,600
MANITOBA			
1964	84	17.5	1,470
1965	145	16.6	2,400
1966	158	13.3	2,100
1967	145	15.9	2,300
1968	91	20.9	1,900
1969(1)	196	17.9	3,500
TOTAL			
1964	791	16.7	13,230
1965	1,435	15.7	22,600
1966	1,525	16.9	25,800
1967	1,620	15.2	24,700
1968	1,052	18.4	19,400
1969(1)	2,012	18.4	37,100

NOTE: (1) As indicated on basis of conditions on or about October 28, 1969.

SOURCE: Dominion Bureau of Statistics, Catalogue No. 22-001.

Table 3.

ACREAGE AND NUMBER OF CENSUS FARMS REPORTING RAPESEED IN ALBERTA - 1966

Census Division	Acreage (Acres)	Number of farms Reporting
1	20	1
2	900	10
3	1,411	13
4	600	5
5	13,841	173
6	30,513	345
7	36,047	380
8	49,915	721 *
9	261	4
10	72,587	975 *
11	32,859	482
12	46,584	817 *
13	78,019	1,507 *
14	102	7
15	260,815	3,410
TOTAL	624,477	8,850

Source: Dominion Bureau of Statistics, 1966 Census of Canada, Catalogue No. 96-610, Vol. V.

Table 4.

CANADIAN EXPORTS OF RAPESEED

(tons)

Destination:	1963	1964	1965	1966	1967	1968
United Kingdom	1,820	2,296	8,922	4,055	1,140	-
Belgium-Luxemburg	-	-	1,696	8,369	-	-
West Germany	241	232	22,646	21,710	224	253
Italy	19,223	3,265	48,126	60,288	87,127	8,168
Netherlands	2,772	9,342	22,429	40,005	17,483	6,753
Spain	-	1,003	152	28	120	40
Czechoslovakia	-	-	15,184	-	-	-
Poland	-	-	9,921	-	-	-
Pakistan	-	-	22,462	19,841	-	-
Japan	114,738	62,492	114,556	194,498	234,546	277,403
United States	382	3,133	119	141	248	267
Algeria	13,888	-	-	-	-	-
South Korea	-	-	-	-	-	405
Taiwan	2,205	4,235	-	-	15,955	52,306
Finland	-	2,240	-	-	-	-
India	-	2,800	-	-	-	-
Morocco	-	-	-	-	14,197	13,759
Total Exports	155,269	91,038	266,213	348,935	371,040	362,262

Source: Exports By Commodities, Dominion Bureau of Statistics, Catalogue No. 65-004

RAPESEED CRUSHING AND REFINING TECHNOLOGY

Rapeseed oil must be extracted from the seed and refined before it is acceptable for use in edible products such as margarine and shortening.

The three processes by which the oil is removed from rapeseed are the expeller method, the pre-press and solvent extraction method and the straight solvent extraction process. The expeller method uses continuous-screw presses which separate the oil from the seed by employing high pressures. The pre-press and solvent extraction process involves crushing the seed to remove the major portion of the oil and then treating the crushed seed with a solvent to remove the remaining oil. In the third method the straight solvent extraction, the seed is broken up and then treated with a solvent to extract the oil.

The crude oil is refined to remove any undesirable elements such as non-fatty materials known as "gum", color bodies or pigment and free fatty acids. The so called gums may be removed by a water treatment followed by centrifugation, or may be removed in the course of alkali refining. Alkali refining will also remove all free fatty acids and neutralizes the oil. It removes some of the undesirable pigments. After the alkali treatment, the oil is usually bleached. Depending on the ultimate use, it may next be hydrogenated or immediately be deodorized with steam under a high vacuum. Use as a salad oil requires an additional winterization step, which involves chilling and separation of a small precipitate. The following description of the refining process and the diagram, figure 3, were taken from a United States Department of Agriculture

publication entitled "Fats and Oils Situation".[1]

Degumming - removes phosphatides and other non-oil substances from the crude oil.

Refining - further purifies crude oil by combining it with an alkali (usually caustic soda) or by some other chemical or steam operation.

Bleaching - further purifies the oil by reducing the color of the oil after it has been refined. It is done by treating the refined oil with various materials, primarily natural or activated clays. Activated carbon is also used to a limited extent.

Hydrogenation - converts liquid oils into solid or semi-solid (plastic) fats to make them suitable for shortening and margarine manufacture. Hydrogenation enhances the stability of the fat or oil and improves its quality, helping prevent deterioration from oxidation or flavor reversion. Gaseous hydrogen and a catalyst, usually nickel, are used in the process.

Winterizing - conditions the oil, enabling it to remain liquid at lower temperatures. It is done by chilling and filtering the oil to remove glycerides that solidify at reduced temperatures.

Deodorization - removes any remaining material that gives rise to unpleasant flavors and odors from the oil following refining, bleaching, or hydrogenation. It is performed by means of the use of live steam to remove these undesirable materials which are relatively more volatile than the fat or oil.

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[1] Fats and Oils Situation, United States Department of Agriculture, Economic Research Service, FOS-244, September 1968.,

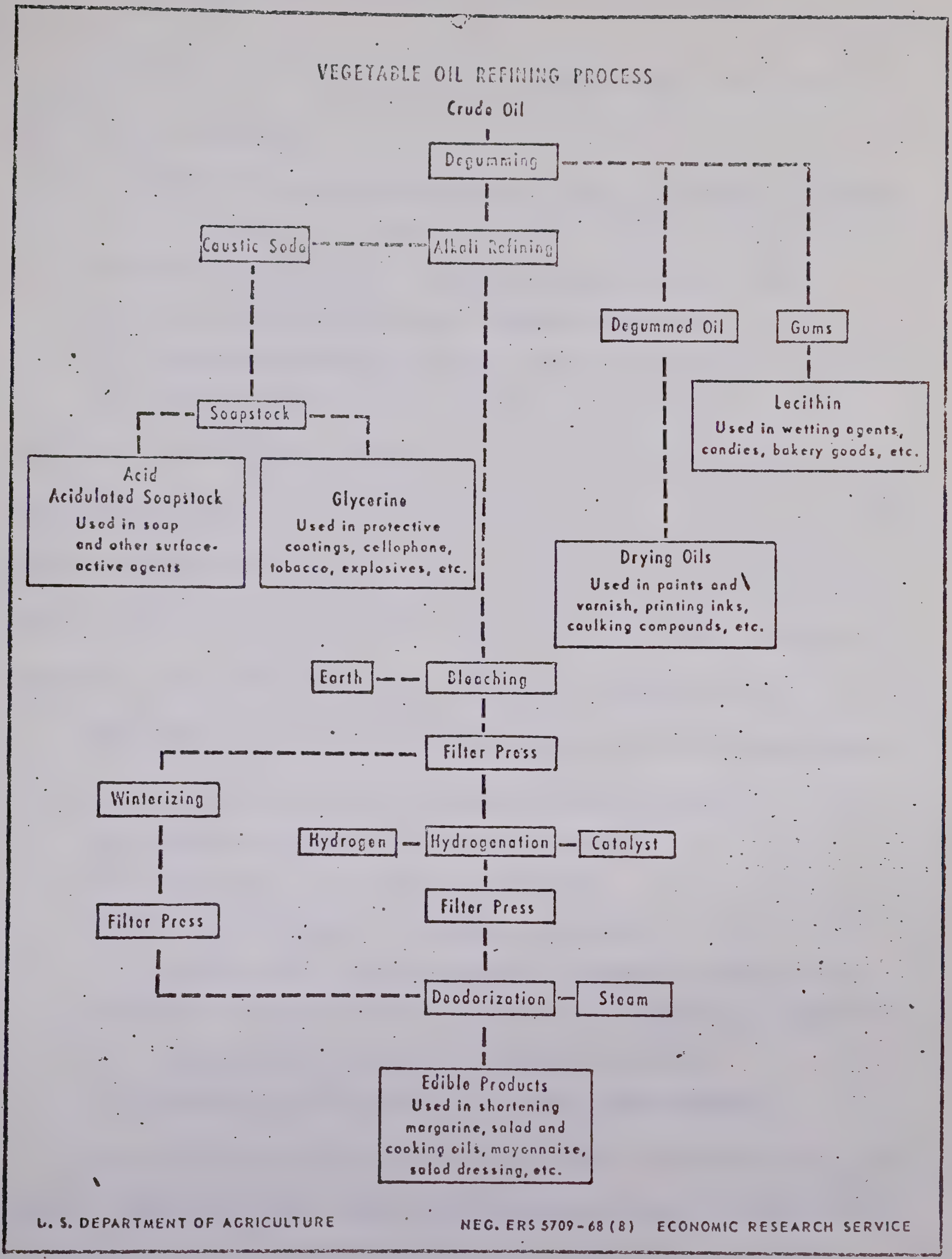
VEGETABLE OIL REFINING PROCESS
Crude Oil
Degumming
Caustic Soda
Alkali Refining
Degummed Oil
Gums
Lecithin
Used in wetting agents, candies, bakery goods, etc.
Soapstock
Acid
Acidulated Soapstock
Used in soap and other surface-active agents
Glycerine
Used in protective coatings, cellophane, tobacco, explosives, etc.
Drying Oils
Used in paints and varnish, printing inks, caulking compounds, etc.
Earth
Bleaching
Filter Press
Winterizing
Hydrogen
Hydrogenation
Catalyst
Filter Press
Filter Press
Deodorization
Steam
Edible Products
Used in shortening margarine, salad and cooking oils, mayonnaise, salad dressing, etc.
U. S. DEPARTMENT OF AGRICULTURE
NEG. ERS 5709-68 (8)
ECONOMIC RESEARCH SERVICE

Figure 3

RAPESEED CRUSHING INDUSTRY IN CANADA

At the present time there are six producers of crude rapeseed oil in Canada. They are:

1. Western Canada Seed Processors Ltd., Lethbridge, Alberta.
2. Agra Vegetable Oil Products, Ltd., Nipawin, Saskatchewan.
3. Saskatchewan Wheat Pool, Saskatoon, Saskatchewan.
4. Co-op Vegetable Oils Ltd., Altona, Manitoba.
5. Canada Linseed Oil Mills Ltd., Montreal, Quebec. – [illegible]
6. Swift Canadian Co. Ltd., Toronto, Ontario.

It is believed that Maple Leaf Mills Ltd., Toronto, is planning to crush rapeseed in the near future.[1] Plants numbered 1, 2, and 4 are prepress-solvent extraction units, number 3 is a straight solvent extraction unit, while 5 is an older, high pressure expeller unit. The Maple Leaf plant in Toronto will be of the pre-press and solvent-extraction type.

The following companies are the major refiners of rapeseed oil:

1. Monarch Fine Foods, Rexdale, Toronto, Ontario.
2. Canada Packers, Ltd., Toronto, Ontario.
3. Lever Bros. Ltd., Toronto, Ontario
4. Proctor and Gamble, Hamilton, Ontario.
5. Agra Vegetable Oil Products Ltd., Nipawin, Saskatchewan.
6. Western Canada Seed Processors Ltd., Lethbridge, Alberta.
7. Co-op Vegetable Oils, Ltd., Altona, Manitoba.
8. Saskatchewan Wheat Pool, Saskatoon, Saskatchewan.

Of the five plants that crush rapeseed, four are located in Western Canada. These four plants have a total capacity in excess of 700 tons of

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[1] Taylor, E. B., Report on the Oil Refining Aspects of the Technical Rapeseed Mission to Canada, (March-April, 1968).

raw materials per day. This amounts to an annual capacity of at least 231,000 tons of rapeseed, or 9.24 million bushels, the equivalent of 185 million pounds of oil.[2] If this figure of 185 million pounds of oil is compared to the total amount of rapeseed oil produced in 1968, it would represent 159%. Thus the western plants could increase the supply of rapeseed oil crushed in 1968 by about 60%.

As mentioned above the four western plants are both crushers and refiners., Two of these plants, Western Canada Seed Processors Ltd., and Saskatchewan Wheat Pool have facilities for producing salad and cooking oils. The plant in Lethbridge, Western Canadian Seed Processors Ltd., also prepares shortenings, and packages products for ultimate consumers.

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[2] Weinberg, B., Unpublished letter, Ottawa, June 4, 1969.

PROBLEMS FACING THE WESTERN CANADIAN RAPESEED CRUSHERS

The western rapeseed industry faces competition from three areas: imported edible oils, eastern soybean crushers and eastern rapeseed crushers. Of these three problems the most serious is the competition from eastern crushers who have begun the processing of raw rapeseed.

Under the Kennedy Round of tariff negotiations, the following schedule was recommended by the Tariff Board in its report on oilseeds, vegetable oils and related products (Reference Number 131). In general this schedule provides for free entry for oilseeds, oilcake and oil meal, a tariff rate of 10 per cent for crude vegetable oils and a rate of 17 1/2 per cent on refined oils. However, rapeseed exported to the United States carries a duty of 1¢ per pound, rapeseed meal carries a duty of $6.00 per ton; an approximate rate of 10 per cent, and rapeseed oil carries a duty of 2.4¢ per pound which is almost 30 per cent at present price levels. The disparity of these tariffs allows soybeans and soybean products to enter Canada but precludes exports of rapeseed and its products to the United States. The increase in the relative position of rapeseed crushings as compared to soybeans, Table 9, page 27, would indicate that the rapeseed crushing industry is able to meet this type of competition.

The problem of competition from imported edible oils affects both the rapeseed and soybean crushers. In 1968 imports of Soviet Bloc sunflower seed oil increased to 40 million pounds, the equivalent of 11 per cent of domestic production of vegetable oils. A recent article in "Canadian Chemical Processing" on the edible oil industry stated "The outlook for the rapeseed industry now is gloomy. The availability of Soviet Bloc sunflower seed oil

has meant that Canadian rapeseed is threatened with the loss of export markets and also with a portion of the domestic market".[1] The 10 per cent duty on crude sunflower seed oil and 17 1/2 per cent on the refined oil entering Canada may provide sufficient protection for the domestic market.

There exists a disparity between the cost of shipping rapeseed as a grain, and the cost of shipping the oil and meal to Eastern Canada. Before 1961 domestic freight rates were applied to the movement of rapeseed and its products, but an amendment added rapeseed as a grain under Section 328 of the Railways Act. This resulted in the application of what is commonly called the "Crow Rate" on the movement of rapeseed to Vancouver, Churchill, and the Lakehead. Grain products, as defined by the Railway Act, are also accorded these rates. However in dealing with rapeseed, the meal was defined as a grain product but the oil was not. On February, 1967, the National Transportation Act was passed. This Act amended the "Crowsnest" section of the Railway Act and confirmed the exclusion of rapeseed oil.

The effect of this legislation has been to place western crushers at a competitive disadvantage compared to their eastern counterparts. Prior to 1967, eastern crushers were not interested in crushing rapeseed, thus the disadvantage in transportation costs did not seriously affect the western crusher. Since that time one eastern plant has begun to crush rapeseed while another is planning to. Eastern crushers have been processing soybeans imported from the United States. Locations such as Hamilton, Toronto and Montreal are able to receive soybeans shipped from the United States by water. These locations can also receive rapeseed shipped from Western

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[1] "Growers, Crushers Face Gloomy Future", Canadian Chemical Processing, Vol. 52, No. 8, (August, 1968), p. 48

Canada to Fort William under the "Crow Rate", and then from Fort William by ship. As movement by water is cheaper than by rail, this increases the disparity in transportation costs. Appendix 1 illustrates typical transportation costs for the four western plants with corresponding figures for the rail movement of rapeseed to Toronto. These figures show that Western Canadian Seed Processors in Lethbridge suffers a disadvantage of at least $0.75 based on a hundred pounds of rapeseed. This figure should be considered as a conservative estimate of the difference in transportation costs, because the comparison shown in Appendix 1 is based on the rail movement of rapeseed. Appendix 2 is a schematic diagram showing the movement of rapeseed and its products from Alberta to eastern Canada.

The transportation costs also affect the export possibilities of western crushers. Canadian rapeseed being shipped to Vancouver, for export, under the statutory grain rates, is competitive in world markets, the oil moving under domestic rail rates is not. Another problem faced by western crushers wishing to export rapeseed oil to Asian countries, is the need to establish some kind of modern facility on the Pacific coast for the handling of rapeseed oil.

CANADIAN MARKET FOR VEGETABLE OILS

In the past six years the amount of rapeseed crushed in Canada has risen from 80 million pounds in 1963 to 288 million pounds in 1968. In this period the amount of oil produced increased from 31 million pounds to 116 million pounds. As most edible oils and fats are interchangeable, wherever possible, figures on animal fats and marine oils have been included, in order to present a complete picture.

Domestic Production

Canadian production of edible vegetable oil, shown on Table 6, has climbed from 220 million pounds in 1963 to over 319 million pounds in 1968. In 1963 rapeseed oil accounted for 14% of the total amount of edible vegetable oil produced in Canada. The following table shows that in 1968 rapeseed oil represented 36%.

Table 5

CANADIAN PRODUCTION OF EDIBLE VEGETABLE OILS BY TYPE OF OIL SEED

	1963	1964	1965	1966	1967	1968
			---	% ---		
Soybean Oil	85	83	77	69	67	60
Rapeseed Oil	14	14	20	29	31	36
Sunflower Seed Oil	1	3	3	2	2	4

Table 6

CANADIAN CRUSHINGS OF EDIBLE VEGETABLE OIL SEEDS AND PRODUCTION OF MEAL & OIL

(millions of pounds)

	1963	1964	1965	1966	1967	1968
Crushings:						
Soybeans	1,089	1,158	1,173	1,203	1,262	1,152
Rapeseed	80	87	132	214	251	288
Sunflower seed	7	21	20	12	17	29
TOTAL	1,176	1,266	1,325	1,429	1,530	1,469
Oil Production:						
Soybeans	187.0	200.0	199.0	198.0	215.5	191.6
Rapeseed	31.0	34.0	52.0	84.0	100.9	116.4
Sunflower seed	2.4	6.7	6.7	4.4	6.8	11.4
TOTAL	220.4	240.7	257.7	286.4	323.2	319.4
Meal Production:						
Soybeans	855.0	917.0	932.0	950.0	1,006.0	913.0
Rapeseed	47.2	51.2	76.5	122.8	142.0	165.0
Sunflower seed	2.4	7.1	7.3	4.6	6.4	10.0
TOTAL	904.6	975.3	1,015.8	1,077.4	1,154.4	1,088.0

Source: Oils and Fats, Dominion Bureau of Statistics, Catalogue No. 32-006

Although the absolute amount of soybean oil produced in Canada has increased since 1963, its relative position as an edible vegetable oil has been declining. Soybean oil which accounted for 85 per cent of domestic production in 1963, now represents 60 per cent of the total vegetable oil produced in Canada.

Table 7

CANADIAN PRODUCTION OF EDIBLE FATS AND OILS
(Percent of total production)

	1963	1964	1965	1966	1967	1968
			---	% ---		
Vegetable Oils	31	32	35	38	40	41
Animal Fats	60	59	57	54	53	52
Marine Oils	9	9	8	8	7	7

In the period from 1963 to 1968 the production of vegetable oils as a percentage of total production of edible fats and oils has climbed from 31% to 41%. The increases shown by the vegetable oil group have been caused by a decline in the production of butter and marine oils. The oil equivalent of butter, assumed to be 80% by weight, was 285 million pounds in 1963, but only 266 million pounds in 1968. Marine oils in the same period have declined from 62 million pounds in 1963 to 55 million pounds in 1968.

The total Canadian production of edible fats and oils has increased slightly in the six-year period from 1963 to 1968 (see Table 8). In this period the amount of vegetable oil produced has been increasing while the amount of animal fat and marine oil has been declining.

Table 8

CANADIAN PRODUCTION OF EDIBLE FATS AND OILS

(thousands of pounds)

	1963	1964	1965	1966	1967	1968
Vegetable Oils (1)						
Soybean oil	186,750	200,318	198,588	197,867	215,500	191,600
Rapeseed oil	30,711	34,116	51,808	84,447	100,900	116,400
Sunflower seed oil	2,368	6,699	6,658	4,430	6,800	11,400
Total	219,829	241,133	257,054	286,744	323,200	319,400
Animal Fats						
Edible tallow	42,130	49,588	49,950	48,370	44,267	43,500
Lard	100,038	108,177	96,769	86,302	109,000	103,000
Butter (as butter oil) (2)	285,000	285,000	273,000	270,500	266,255	266,352
Total	427,168	442,765	419,719	405,172	419,522	412,852
Marine Oil						
Herring	54,200	49,230	48,890	44,397	51,671	50,408
Seal	1,534	1,270	2,350	3,294	-	4,232
Whale	6,500	9,800	6,198	9,361	-	559
Total	62,234	60,300	57,438	57,052	51,671	55,199
Total Edible Oil	709,231	744,198	734,211	748,968	794,393	787,451

Notes:

(1) Corn oil and cocoa butter not included

(2) Oil equivalent of butter is assumed to be 80 per cent. by weight

Source:

Fats and Oils in Canada/ Semi-annual review,
Department of Industry, Food Products Branch, December 1967

Oils and Fats, Dominion Bureau of Statistics, December 1968

The domestic production of deodorized oils suitable for the manufacture of margarine, shortening and salad oil are given on Table 9. These figures include production of oils from primary products to fully deodorized edible products ready for packaging or bulk shipments and the processing of crude or partially prepared oils from that state to fully deodorized oils ready for incorporation in margarine, etc. This table includes the production of oils from imported raw material. The amount of deodorized oil produced in 1967 was 533 million pounds, in 1968 this figure increased slightly to 554 million pounds. Rapeseed and soybean oil accounted for 19% and 29% respectively of the total amount of deodorized oils produced in 1967. In 1968 these figures were: rapeseed oil 21%, and soybean oil 26%.

Table 10 shows the volume of oils purchased by packaging establishments from domestic refineries and the volume of imported oils. This table excludes the volume of deodorized oil utilized by those establishments which produce end products from primary material or partially processed oils. This would represent purchases by the manufacturers that do not have their own crushing and refining plants.

DOMESTIC PRODUCTION OF DEODORIZED OILS - 1967, 1968

(thousands of pounds)

	Margarine Oil		Shortening Oil		Salad Oil		Total Production	
	1967	1968	1967	1968	1967	1968	1967	1968
Vegetable Oils								
Coconut	836	85	26,723	24,482	-	-	27,559	24,567
Corn	x	x	x	x	x	x	24,394	24,690
Cottonseed	x	x	x	x	x	x	9,081	7,294
Palm	x	6,937	12,489	11,851	x	27	19,897	18,815
Palm Kernel	-	-	9,445	9,588	-	-	4,445	9,588
Peanut	x	-	x	x	x	x	26,768	24,763
Rapeseed	36,224	32,803	38,660	46,023	26,858	37,867	101,742	116,692
Soybean	53,898	51,209	70,678	70,397	29,132	24,568	153,708	146,174
Sunflower Seed	x	4,721	x	8,265	27,627	35,339	33,043	48,325
Other vegetable	x	15	x	496	-	654	140	1,165
TOTAL	106,029	101,898	188,681	197,134	111,067	123,041	405,777	422,073
Marine Oils								
Herring	32,869	35,655	18,802	14,754	-	-	51,671	50,408
Seal	(3)	3,178	-	1,054	-	-	(3)	4,232
Whale	-	266	-	293	-	-	-	559
Other marine	(3)	-	(3)	241	-	-	(3)	241
TOTAL	32,869	39,099	18,802	16,342	-	-	51,671	55,440
Animal Oils								
Lard	3,020	3,785	28,454	24,789	-	-	31,474	28,574
Oleo, all types	(4)	-	(4)	5,051	-	-	(4)	5,051
Tallow, edible	(4)	(4)	44,267	43,500	-	-	44,267	43,500
TOTAL	3,020	3,785	72,721	73,340	-	-	75,741	77,125
TOTAL DEODORIZED OIL	141,918		280,204		111,067		533,189	554,639

Notes:

(1) x - indicates figures are confidential
(2) - indicates Nil or Zero
(3) Small amount included with "Herring"
(4) Small amount included with "Lard"

Source: Oils and Fats, Dominion Bureau of Statistics, Catalogue No. 32-006

Table 10

PURCHASES OF DEODORIZED OILS - 1968

(thousands of pounds)

	CANADIAN			IMPORTS			
	Margarine Oil	Shortening Oil	Salad Oil	Margarine Oil	Shortening Oil	Salad Oil	TOTA
Major Vegetable Oils:							
Palm	2,968	x	-	-	-	-	
Rapeseed	15,935	x	x				
Soybean	44,089	2,933	x	x	x	-	
Sunflower	1,273	94	x	-	-	-	
Other vegetable	2,256	x	-	222	-	x	
TOTAL	71,881	9,674	24,995	4,914			111,464
Marine Oils:							
Herring	19,540	269					19,809
Animal Oils:							
Lard	2,521			6,884			
Tallow, edible		131					
TOTAL	2,521	131		6,884			9,536
TOTAL ALL OILS:	93,942	10,075	24,995	11,798	x	x	140,810

Note: (1) x indicates figures are confidential

Source: Oils and Fats, Dominion Bureau of Statistics, Catalogue No. 32-006

Imports of Edible Fats and Oils:

Canadian imports of edible fats and oils in the six-year period from 1963 to 1968 have increased from 246 million pounds to 254 million pounds. Imports of vegetable oils have increased by approximately 17 million pounds. Animal fat imports have increased by 11 million pounds, while imports of marine oils have declined by 20 million pounds. The actual imports figures are shown on Table 13, and the relative percentages are shown below on Table 11.

Table 11

CANADIAN IMPORTS OF EDIBLE FATS AND OILS

Percentage of Total Imports

	1963	1964	1965	1966	1967	1968
			%			
Vegetable Oils	83	92	87	82	85	87
Animal Fats	7	8	9	15	12	11
Marine Oils	10	-	4	3	3	2

These imports of edible fats and oils have ranged from a low of 28% of domestic production to a high of 39%. Table 12 shows imports as a percentage of domestic production.

Table 12

CANADIAN IMPORTS OF EDIBLE FATS AND OILS

Expressed as a Percentage of Domestic Production

	1963	1964	1965	1966	1967	1968
			%			
Vegetable Oils	93	79	80	90	79	71
Animal Fats	4	4	5	12	9	8
Marine Oils	40	2	14	18	15	7
Total Imports of Edible Fats & Oils	35	28	32	42	39	36

The total amount of edible fats and oils that were imported by Canada in 1968 were about 254 million pounds; this would correspond to 36% of domestic production for that year. Of the 254 million pounds of imported oils and fats, 221 million pounds were vegetable oil or vegetable oil products that could conceiveably be replaced by domestically crushed rapeseed oil. The amount of vegetable oil and oil products imported in 1968 represents about 71% of domestic production of vegetable oils for that year.

CANADIAN IMPORTS OF EDIBLE FATS AND OILS

(thousands of pounds)

	1963	1964	1965	1966	1967	1968
Vegetable Oils:						
Soybean oil	29,613	34,505	29,946	24,342	23,142	22,315
Cotton seed oil	38,528	37,422	47,646	32,225	11,459	10,648
Corn oil	(1)	17,067	14,377	20,308	14,021	15,406
Peanut oil	18,580	9,647	9,247	31,555	26,623	27,681
Coconut oil	37,845	39,750	39,618	42,641	44,567	45,141
Palm oil	25,483	13,112	18,913	26,761	21,622	18,736
Palm kernel oil	8,080	7,327	9,877	9,182	12,121	12,100
Olive oil	1,912	3,705	2,731	3,371	4,546	4,013
Cocoa butter	11,766	13,157	13,185	15,545	12,943	16,546
Sunflower seed oil	-	-	-	(2)	34,289	40,097
Vegetable oils and fats (2)	28,429	5,256	7,488	38,644	17,436	2,732
Vegetable cooking fats and Pack salad oils	(3)	4,143	9,254	7,714	2,206	1,569
Margarine and shortening	4,447	5,129	3,526	4,496	4,134	4,891
TOTAL	204,683	190,220	205,808	256,784	229,109	221,875
Animal Fats:						
Lard	17,133	16,001	20,734	28,439	24,112	28,375
Butter (oil equivalent)	-	-	1,350	18,950	7,656	12
TOTAL	17,133	16,001	22,084	47,389	31,768	28,387
Marine Oils:						
Fish and marine [illegible] oil	24,813	980	7,981	10,078	7,867	3,752
TOTAL	24,813	980	7,981	10,078	7,867	3,752
TOTAL Edible Oils and Fats	246,629	207,201	235,873	314,251	268,744	254,014

Notes:

(1) Corn oil was listed with other oils until 1963, and listed separately starting in 1964.

(2) In 1967 sunflower seed oil was included under vegetable oils and fats.

(3) Listed under vegetable oils and fats until 1963.

Source: Fats and Oils/Semi-annual Review, Department of Industry, Food Products Branch, December 1967.

Imports by Commodities, Dominion Bureau of Statistics, December 1967, 1968.

Exports of Edible Fats and Oils:

Canadian exports of edible fats and oils, while fluctuat have had a tendency to decline. The total export figures shown on Table 15 show that in 1963, our exports were 58 million pounds nd in 1968 they dropped to 46 million pounds.

Table 14

CANADIAN EXPORTS OF EDIBLE FATS AND OILS

Percent of Total Exports

	1963	1964	1965	1966	1967	1968
			%			
Vegetable Oils	82	32	71	90	70	83
Animal Fats	8	36	5	3	3	6
Marine Oils	10	32	24	7	27	11

The major single item of export in 1968 was soybean oil which accounted for 67% of total exports of edible fats and oils. Exports of rapeseed oil have declined from 122 thousand pounds in 1963 to 5 thousand pounds in 1965. Since 1965 the Dominion Bureau of Statistics has included any exports of rapeseed oil under the category of vegetable oils and fats because of the small quantities involved.

Table 15

CANADIAN EXPORTS OF EDIBLE FATS AND OILS

(thousands of pounds)

	1963	1964	1965	1966	1967	1968
Vegetable Oils:						
Soybean oil	45,373	25,017	34,727	29,194	42,932	31,370
Rapeseed oil	122	391	5	-	-	-
Margarine and shortening	121	104	168	228	191	201
Vegetable oils and fats	2,283	458	677	543	1,100	7,024
TOTAL	47,899	25,970	35,577	29,965	43,223	38,595
Animal Fats:						
Lard	23	34	31	(1)	(1)	(1)
Butter (oil equivalent)	4,540	29,600	2,370	1,300	2,534	2,567
TOTAL	4,563	29,634	2,401	1,300	2,534	2,567
Marine Oils:						
Herring oil	947	23,291	7,578	790	4,242	337
Whale oil	4,918	3,161	4,526	1,425	12,549	5,063
TOTAL	5,865	26,452	12,104	2,215	16,791	5,400
TOTAL Edible fats and Oils	58,327	82,056	50,082	33,480	62,548	46,562

Notes:

(1) Starting in 1966 lard exports are included with margarine and shortening export data.

Source: Fats and Oils in Canada/Semi-annual Review, Department of Industry, Food Products Branch, December 1967

Exports by Commodities, Dominion Bureau of Statistics, December, 1967 and 1968

Total Supply of Edible Fats and Oils in Canada:

Table 16 is an approximation of the total supply of edible fats and oils consumed in Canada. The total figure shown in this table is not complete, as inventory changes and losses due to wastage and shrinkage have not been taken into consideration. The apparent per capita domestic disappearance of edible oils and fats, Table 17 lists the amount of edible fats and oils that are consumed in food usage. When these figures are multiplied by the population of Canada they give an approximate idea of the total amount of edible oils and fats that are consumed in the production of food.

Table 16

TOTAL SUPPLY OF EDIBLE FATS AND OILS IN CANADA

(millions of pounds)

	1963	1964	1965	1966	1967	1968
Vegetable Oils:						
Domestic Production	220.4	240.7	257.7	286.4	323.2	319.4
Plus Imports	204.7	190.2	205.8	256.8	229.1	221.9
Minus Exports	(47.9)	(26.0)	(35.6)	(30.0)	(43.2)	(38.6)
Net Supply	377.2	404.9	427.9	513.2	509.1	502.7
Animal Fats:						
Domestic Production	427.2	442.7	419.7	405.2	419.5	412.9
Plus Imports	17.1	16.0	22.1	47.4	31.8	28.4
Minus Exports	(4.6)	(29.6)	(2.4)	(1.3)	(2.5)	(2.6)
Net Supply	439.7	429.1	439.4	451.3	448.8	438.7
Marine Oils:						
Domestic Production	62.2	60.3	57.4	57.1	51.7	35.2
Plus Imports	24.8	1.0	8.0	10.1	7.9	3.8
Minus Exports	(5.8	(26.5)	(12.1)	(2.2)	(16.8)	(5.4)
Net Supply	81.2	34.8	53.3	65.0	42.8	33.6
Total Supply of Edible Fats and Oils (1)						
Domestic Production	709.8	743.7	734.8	748.7	794.4	767.5
Plus Imports	246.6	207.2	235.9	314.3	268.8	254.1
Minus Exports	(58.3)	(82.1)	(50.1)	(33.5)	(62.5)	(46.6)
Net Supply	898.1	868.8	920.6	1,029.5	1,000.7	975.0

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(1) Inventory changes have not been included

( ) Brackets indicate exports are to be subtracted from total supply.

Source: Dominion Bureau of Statistics, Catalogue No. 32-006.

Table 17

APPARENT PER CAPITA DOMESTIC DISAPPEARANCE OF EDIBLE OILS AND FATS

	Pounds per capita per annum --					
	1962	1963	1964	1965	1966	1967
I By Retail Weight:						
Margarine	9.9	9.2	8.9	8.7	8.9	9.1
Lard	8.0	7.5	7.7	7.4	6.9	7.8
Shortening & Shortening oils	9.6	9.9	10.3	9.9	12.6	13.8
Other oils & fats	5.0	5.0	4.8	4.7	6.3	5.4
Butter	17.9	19.1	19.0	18.6	17.8	16.8
TOTAL	50.4	50.7	50.7	49.3	52.5	52.9
II By Fat Content:						
Margarine	8.0	7.5	7.2	7.0	7.2	7.4
Lard	8.0	7.5	7.7	7.4	6.9	7.8
Shortening & Shortening Oils	9.6	9.9	10.3	9.9	12.6(1)	13.8(1)
Other oils & fats	5.0	5.0	4.8	4.7	6.3(1)	5.4(1)
Butter	14.5	15.5	15.4	15.1	14.4	13.6
TOTAL	45.1	45.4	45.4	44.1	47.4	48.0

Notes:

1) Not comparable with previous years, due to increased coverage.

Source: Apparent per capita domestic disappearance of food in Canada, Dominion Bureau of Statistics, Catalogue No. 32-226

Consumption of Edible Fats and Oils by Province:

The estimated market, by province, for edible fats and oils is shown on Table 18. This table is an estimate of the retail market for edible oil products and thus may not correspond to the market distribution for crude fats and oils. The apparent per capita disappearance of edible fats and oils, taken from Table 17 was multiplied by the population of each province to provide the consumer market for edible oils. These estimates are based on food uses of edible oils. The total estimated market for each province represents the consumption by that province of the oil and fat content of margarine, lard, shortening, etc. If the production of these products is distributed across Canada according to population, and if margarine consumption per person is equal across Canada, then these estimates would reflect the demand for the oil or fat itself. However, due to the concentration of manufacturing establishments in Ontario and Quebec, these estimates would tend to understate the edible oil requirements for these two provinces, while inflating the requirements for the Atlantic and western provinces.

Converting the figures from Table 18 to percentages, the Maritimes would represent 9.7% of the total market; Ontario and Quebec would represent 63.9%; and the western provinces would account for 26.4% of the market for edible oils and fats. An industry spokesman estimated that 14% of the Canadian market for vegetable oils is located in the maritimes, 56% in Ontario and Quebec and the remaining 30% in the western provinces.

Table 18

ESTIMATED MARKET FOR EDIBLE OILS BY PROVINCE - 1968

(thousands of pounds)

	Population ('000s)	Margarine	Lard	Shortening	Other oils and Fats	Butter	Total
Newfoundland	507	3,752	3,955	6,997	2,738	6,895	24,337
Prince Edward Island	110	814	858	1,518	594	1,496	5,280
Nova Scotia	760	5,624	5,928	10,488	4,104	10,336	36,480
New Brunswick	624	4,618	4,867	8,611	3,370	8,486	29,952
TOTAL Maritimes*	2,001	14,808	15,608	27,614	10,806	27,213	96,049
Quebec	5,927	43,860	46,231	81,793	32,006	80,607	284,497
Ontario	7,306	54,064	56,987	100,823	39,452	99,362	350,688
TOTAL Eastern*	13,233	97,924	103,218	182,616	71,458	179,969	635,185
Manitoba	971	7,185	7,574	13,400	5,243	13,206	46,608
Saskatchewan	960	7,104	7,488	13,248	5,184	13,056	46,080
Alberta	1,526	11,292	11,903	21,059	8,240	[illegible],754	73,248
British Columbia	2,007	14,852	15,654	27,697	10,838	27,295	96,336
TOTAL Western*	5,464	40,433	42,619	75,404	29,505	74,311	262,272
TOTAL CANADA	20,698	153,165	161,445	285,634	111,769	281,493	993,506

Source: Alberta Bureau of Statistics.

CANADIAN MARKET FOR RAPESEED OIL

Canadian production of rapeseed oil has increased from 31 million pounds in 1963 to 116.4 million pounds in 1968. In 1964 production increased by 9.7 per cent, in 1965 by 52.9 per cent, in 1966 by 81.5 per cent, in 1967 by 20.1 per cent and in 1968 production of rapeseed had increased by 16.3 per cent. As the world's supply of edible oil is increasing faster than world demand, the rate of expansion of the Canadian rapeseed crushing industry should have a tendency to level off or decline slightly.

Rapeseed oil has three main uses; as margarine oil, shortening oil and salad oil. The following figures show that rapeseed oil usage is fairly evenly distributed between the three uses, with the largest amount being consumed as shortening oil. Actual figures are shown on Table 9. The industrial uses of rapeseed oil are fairly limited and will be discussed in a later paragraph.

TABLE 19 MAJOR USES OF RAPESEED OIL EXPRESSED AS A PERCENT OF TOTAL PRODUCTION

	1966	1967	1968
		---- % ----	
Margarine Oil	(1)	35.6	28.1
Shortening Oil	36.6	38.0	39.4
Salad Oil	(1)	26.4	32.5

NOTE: (1) Figures are confidential.

SOURCE: Dominion Bureau of Statistics, "Oils and Fats", Catalogue # 32-006.

A provincial breakdown of the market for rapeseed oil would be identical to the distribution given for edible oils and fats in the section entitled "Consumption of Edible Fats and Oils by Province". This estimate, based on the population distribution, gives the Maritimes 9.7 per cent, Ontario and Quebec, 63.9 per cent and the western provinces 26.4 per cent of the total market for rapeseed oil. The consumption of rapeseed oil by industry in the four western provinces for 1966, Table 20 shows that only 12 per cent of the rapeseed oil produced in 1966 was consumed by industry in western Canada. It is estimated that the crushing and refinery plant in Lethbridge, produces and refines many times this amount per year.[1]

The industrial uses of rapeseed oil are very limited; generally no more than 2% of the rapeseed oil produced in Canada is used for these purposes. There are small amounts of rapeseed oil used in the cold-rolling of steel, however tallow is usually cheaper. The tanning and textile industry use small amounts of rapeseed oil and sulphonated rapeseed oil is used as an emulsifier in lubricants by the petroleum industry. Although the Saskatchewan Research Council has experimented with the use of rapeseed oil as an ingredient in grease and lubricants, there do not seem to be any companies planning to use rapeseed oil on a large scale.

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[1] Submission to Prairie Economic Council, By the Vegetable Oil Industry In Western Canada, (Edmonton, July 1968).

Table 20

CONSUMPTION BY INDUSTRY OF SPECIFIED VEGETABLE OILS IN THE FOUR WESTERN PROVINCES -- 1966

	Manitoba	Saskatchewan	Alberta	British Columbia
	(thousands of pounds)			
Slaughtering and Meat Processors				
Cocoanut Oil	1,019	-	-	-
Cottonseed Oil	4,619	-	-	1,212
Peanut Oil	363	-	-	-
Soybean Oil	2,858	-	154	120
Corn Oil	1,095	-	-	-
Rapeseed Oil	4,588	-	4,047	239
All other vegetable oils, (not specified)	-	-	176	-
Biscuits Industry				
Cocoanut Oil	465	-	-	133
All other vegetable oils (not specified)	263	-	-	1
Bakeries Industry				
Cottonseed Oil	4	1	17	18
Corn Oil	11	3	39	7
All other vegetable Oils (not specified)	135	16	33	119
Vegetable Oil Mills				
Soybean Oil	-	-	416	-
Fish Products Industry				
Soybean Oil	-	-	-	332
Confectionery Industry				
All other vegetable oils (not specified)	90	-	-	1
Miscellaneous Foods Industry				
Cocoanut Oil	-	138	-	69
Cottonseed Oil	-	-	-	3,258
Peanut Oil	-	-	-	145
Soybean Oil	-	-	-	12,247
Corn Oil	3,534	-	1,004	197
Rapeseed Oil	-	-	-	1,449
All other vegetable Oils (not specified)	-	-	5,820	665

(Continued)

	Manitoba	Saskatchewan	Alberta	British Columbia
	(thousands of pounds)			
Paint and Varnish Manufacture				
Castor Oil	15	-	-	63
China Wood Oil	52	-	-	266
Cocoanut Oil	-	-	-	2
Linseed Oil	16,258	-	-	25,014
Soybean Oil	43	-	-	1,954
Tall Oil	38	-	-	53
Safflower Oil	42	-	-	70
All other vegetable oils (not specified)	7	-	-	124
Industrial Chemicals Industry				
Cocoanut Oil	-	60	-	-
All other vegetable Oils (not specified)	-	-	117	-
Other Chemical Industries				
Castor Oil	-	-	-	4
Cocoanut Oil	-	-	-	33
Soybean Oil	-	-	-	1
Tall Oil	458	-	-	5
All other vegetable Oils (not specified)	143	369	3	90
Plastic and Synthetic Resins Industry				
Linseed Oil	-	-	2	813
Soybean Oil	-	-	-	680
Tall Oil	-	-	-	143
Printing Inks Industry				
Linseed Oil	-	-	-	40
Soaps and Cleaning Compounds Industry				
Tall Oil	-	-	1	-
Other Industries, n.e.s.				
All other vegetable oils (not specified)	138	-	3,197	6

Source: Dominion Bureau of Statistics.

MARKET FOR RAPESEED MEAL

The rapeseed meal that is left following oil extraction is used as high-protein feed. The protein level varies from 32 to 42 per cent with an average content of 37 per cent. Rapeseed meal can be used as a substitute for linseed meal, soya bean meal, and any other plant protein supplement in livestock and poultry rations.[1] The crude fiber level of rapeseed meal average approximately 9 - 12 per cent, and is somewhat higher than that of soya bean meal. The amino acid composition of rapeseed meal compares favourably with that of soya bean meal.

Early studies carried out with expeller-processed rapeseed meal showed adverse effects on the growth and reproduction of certain species of animals. However as most Canadian crushing plants now use either a pre-press plus solvent, or a direct solvent extraction process the quality of rapeseed meal has been greatly improved. With either of these two modern processing methods the growth inhibiting properties of the meal have been greatly decreased.

Research studies have now established that the following levels of rapeseed meal in animal feeds will produce results equal to corresponding levels of soya bean meal.[2] For dairy cattle, beef cattle and sheep up to 10 per cent of the total ration may be rapeseed meal. The recommended level for young pigs; up to 50 pounds weight, is 4 - 5 per cent, but for market pigs the meal may be used at up to 10 per cent of the total ration. In poultry feeds; 10 - 15 per cent rapeseed meal may be used in chick starter rations,while 10 per cent rapeseed meal for laying and breeding chickens and turkeys have been shown to be satisfactory when compared to corresponding amounts of protein from soya bean meal.

Rapeseed meal, due to the poor quality of early expeller processed meal, is not as widely accepted as soya bean meal. Because of this,rapeseed meal has not achieved its full potential as a high protein feed. On the basis of quality, availability and price,rapeseed meal is competitive with other forms of protein supplements.

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[1] Oil and Oil Meal from Canadian Rapeseed, Canada Department of Agriculture, Publication 1183, (Ottawa, 1967), p. 11

[2] Bowland, Dr. J. P., Rapeseed Meal For Livestock, Feedstuffs, Vol. 38, No. 21, (May 28, 1966), p. 50

An estimate of the high protein feed supplies available in Canada is shown on Table 21. Rapeseed meal ranks forth, as a shource of high protein supplements, behind soybean meal, packinghouse by-products, and brewer's and distiller's dried grain and malt sprouts. In 1967 high protein feed supplies represented 17 per cent of the estimated feed potential of feed manufacturers shipments. These shipments by feed manufacturers have been classified according to their destination and are listed on Table 22. This table shows that eastern Canada received 68 per cent of the estimated feed potential from pre-mixes, concentrates and complete feeds. The information given in Tables 23, 24 and 25 show that the six eas eastern provinces possesses 58 per cent of all hogs, 65 per cent of all poultry and 43 per cent of all cattle in Canada. Due to the availability of other feed ingredients in western Canada and the amounts of livestock and poultry raised in eastern Canada it is estimated that at present 70 per cent of the market for rapeseed meal is in eastern Canada, with over 80 per cent of this total in Ontario and Quebec.

Table 21

ESTIMATE OF HIGH PROTEIN FEED SUPPLIES AVAILABLE IN CANADA

(thousands of tons)

ITEM	1963	1964	1965	1966	1967	1968 (preliminary)
Vegetable Protein:						
Linseed meal	29	38	26	27	33	29
Soybean meal	443	452	460	479	552	535
Rapeseed meal	23	25	36	60	71	83
* Other oilseed meals, glutenfeed	56	64	63	29	27(1)	29
Brewers & Distillers dried grain and malt sprouts	109	112	128	147	149(1)	146
Total Vegetable Protein	660	691	712	742	832	822
Marine Protein:						
Fish meal	38	23	32	49	51	71
Animal Protein:						
Packinghouse by-products	137	167	190	199	199(1)	207
Skim milk, buttermilk & whey powders	19	19	19	16	16(1)	16
Total Animal Protein	194	208	241	215	215	223
TOTAL PROTEIN SUPPLIES:	854	899	953	1,006	1,098	1,116

Note: (1) preliminary and partly estimated.

* See letter in file re these figures. D.B.S. [illegible]

Source: Coarse Grains Quarterly, Dominion Bureau of Statistics.

TABLE 22

ESTIMATED COMPLETE FIELD POTENTIAL FROM PRE-MIXES AND CONCENTRATES, TOTAL ESTIMATED FEED POTENTIAL FROM SHIPMENTS OF PRE-MIXES, CONCENTRATES AND COMPLETE FEEDS BY MANUFACTURERS ACCORDING TO DESTINATION

Destination	Year (tons of feed)		
	1966	1967	1968
Newfoundland	25,379	27,657	29,438
Prince Edward Island	94,930	75,921	72,329
Nova Scotia	164,013	174,778	174,196
New Brunswick	94,795	98,433	105,877
Quebec	1,608,112	1,734,944	1,779,246
Ontario	2,189,386	2,397,348	2,355,662
Total Eastern Canada	4,176,615	4,509,081	4,516,748
Manitoba	369,768	493,580	458,513
Saskatchewan	199,076	228,222	228,120
Alberta	1,011,500	1,104,955	1,151,175
British Columbia	279,964	285,484	257,345
Total Western Canada	1,860,308	2,112,241	2,095,153
TOTAL All Canada	6,036,923	6,621,322	6,611,901

NOTE: This table combines the total finished feed equivalent available from the volume of pre-mixes, concentrated feeds and the total secondary or finished feeds manufactured from raw ingredients. This material is shown geographically by destination of manufacturers shipments.

SOURCE: Dominion Bureau of Statistics,
"Shipments of Prepared Stock and Poultry Feeds",
Catalogue Number 32 - 004.

TABLE 23

NUMBER OF HOGS ON FARMS IN CANADA AS OF SEPTEMBER 1st

PROVINCE	YEAR (thousands of animals)				
	1964	1965	1966	1967	1968
Prince Edward Island	62.0	71.0	91.0	93.0	88.0
Nova Scotia	58.0	61.0	62.0	62.0	74.0
New Brunswick	46.0	40.0	36.0	41.0	50.0
Quebec	1,120.0	1,010.0	1,274.0	1,380.0	1.161.0
Ontario	2,050.0	1,960.0	2,048.0	2,080.0	1,965.0
Total Eastern Canada	3,336.0	3,142.0	3,511.0	3,656.0	3,338.0
Manitoba	505.0	460.0	582.0	610.0	560.0
Saskatchewan	540.0	430.0	547.0	617.0	540.0
Alberta	1,450.0	1,300.0	1,248.0	1,325.0	1,288.0
British Columbia	42.0	38.0	35.0	43.0	43.0
Total Western Canada	2,537.0	2,228.0	2,412.0	2,595.0	2,431.0
TOTAL All Canada	5,873.0	5,370.0	5,923.0	6,251.0	5,769.0

SOURCE: Dominion Bureau of Statistics,
"Report on Livestock Surveys",
Catalogue Number 23 - 005.

TABLE 24

POULTRY ON FARMS IN CANADA AS OF JUNE 1st

PROVINCE	YEAR (thousands of animals)				
	1964	1965	1966	1967	1968
Prince Edward Island	459.6	453.3	365.5	346.1	322.6
Nova Scotia	2,158.5	2,281.9	2,841.5	2,793.4	2,597.4
New Brunswick	1,086.6	1,182.4	1,397.6	1,406.8	1,447.7
Quebec	14,427.0	16,068.0	20,013.1	21,591.0	21,697.0
Ontario	27,571.0	27,260.0	29,549.7	31,333.0	29,392.0
Total Eastern Canada	45,702.7	47,245.6	54,167.4	57,470.3	55,456.7
Manitoba	7,248.0	6,960.0	7,100.7	7,420.0	7,415.0
Saskatchewan	6,840.0	6,150.0	6,278.3	6,530.0	5,805.0
Alberta	9,515.0	8,855.0	9,562.9	9,665.0	9,145.0
British Columbia	6,524.0	6,758.0	7,830.8	8,557.0	7,972.0
Total Western Canada	30,127.0	28,723.0	30,772.7	32,172.0	30,337.0
TOTAL All Canada	75,829.7	75,968.6	84,940.1	89,642.3	85,793.7

SOURCE: Dominion Bureau of Statistics,
"Report on the Poultry Survey",
Catalogue Number 23 - 006.

TABLE 25

CATTLE ON FARMS IN CANADA AS OF JUNE 1st

PROVINCE	YEAR (thousands of animals)				
	1964	1965	1966	1967	1968
Prince Edward Island	124.0	130.0	125.2	122.0	118.0
Nova Scotia	159.0	157.0	147.6	146.0	144.0
New Brunswick	153.0	150.0	136.5	131.0	130.0
Quebec	1,982.0	1,990.0	1,797.6	1,796.0	1,847.0
Ontario	3,303.0	3,344.0	3,137.0	3,165.0	3,220.0
Total Eastern Canada	5,721.0	5,771.0	5,343.9	5,360.0	5,459.0
Manitoba	1,139.0	1,150.0	1,151.2	1,112.0	1,037.0
Saskatchewan	2,300.0	2,340.0	2,398.0	2,368.0	2,223.0
Alberta	3,135.0	3,195.0	3,439.7	3,405.0	3,322.0
British Columbia	522.0	545.0	546.0	536.0	526.0
Total Western Canada	7,096.0	7,230.0	7,534.9	7,421.0	7,108.0
TOTAL All Canada	12,817.0	13,001.0	12.878.8	12.781.0	12,567.0

SOURCE: Dominion Bureau of Statistics,
"Report on Livestock Surveys",
Catalogue Number 23 - 004.

JAPANESE MARKET FOR RAPESEED OIL AND MEAL

The following information was taken from two sources, "The Report on the Rapeseed Mission to Japan", and "A Study of the Japan Market for Rapeseed and Rapeseed Oil Meal". Both of these publications were sponsored by the Rapeseed Association of Canada.

Although the Japanese domestic consumption of edible oil is expected to reach 880,000 tons in 1968 there appears to be no opportunity to sell Canadian rapeseed oil. The structure of the Japanese import tariffs and quotas adversely affects Canada's export position as these tariffs are designed to protect the domestic crushing industry. Japan is willing to buy the uncrushed rapeseed but not the oil.

Edible oil consumption in Japan from 1963 to 1968 is shown below in Table 26.

TABLE 26 EDIBLE OIL CONSUMPTION IN JAPAN ('000 of tons)

Year	Cooking Oil	Margarine and Shortening	Other Food Uses	Total Consumption
1963	412	117	100	629
1964	449	121	124	694
1965	464	125	128	717
1966	479	147	187	813
1967	509	156	209	874
1968	537	169	229	930

SOURCE: Rapeseed Association of Canada.

In 1967, rapeseed oil accounted for 9.6 per cent of the total supply of edible oil in Japan, and ranked third behind soybean and rice bran.

TABLE 27 SUPPLY OF EDIBLE OIL IN JAPAN
('000 tons)

Year	Soybean Oil	Rapeseed Oil	Other Oil	Total
1963	231	82	845	1,158
1964	240	81	913	1,234
1965	267	104	856	1,227
1966	288	121	919	1,328
1967	291	119	823	1,233

SOURCE: Rapeseed Association of Canada.

The edible oil industry in Japan is characterized by a large number of small plants producing between 1 and 10 tons of oil per day. In 1965 there were 1,061 edible oil plants; of these 60 had a capacity of 50 tons per day, 116 had a capacity of 10 to 15 tons per day and 885 had a capacity of 1 to 10 tons per day. Analysis of raw materials used by the edible oil industry reveals that the large scale plants process soybean, while medium sized plants use rice bean and the small-scale plants use rapeseed. A research report from the Rapeseed Association of Canada indicates that plans are under way for a re-structuring of the Japanese edible oil industry. Emphasis will be placed on large scale plants located by ocean ports.[1] This development should increase the efficiency of Japan's domestic crushing and refining industry.

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[1] A Study of the Japan Market for Rapeseed and Rapeseed Oil Meal, Rapeseed Association of Canada, (November 20, 1968), pp. 15-16.

The Japanese government controls the amount of rapeseed entering the country by import quotas and tariffs. The existing duty on rapeseed is $18.30 per metric ton. However, under the Kennedy Round of Tarriff Negotiations in Geneva, the duties on imported rapeseed will remain constant, while the duties on American soybeans and safflowerseed will be lowered on a graduated scale over a four year period. By January 1st, 1972, the duty on U.S. soybeans will be $7.20 per metric ton. As soybeans are the main competitor to rapeseed and rapeseed oil, any changes in tariffs that lower the price of the soybean relative to rapeseed will have an adverse effect on future Canadian exports.

Inquiries made by the Department of Trade and Commerce show that the general rate of duty on rapeseed oil imported by Japan is $84.00 per metric ton. A temporary rate of $60.00 per metric ton which expired on March 31, 1969 is expected to be extended for another year. If this duty is compared to the Canadian price for crude rapeseed oil, $196.90[1] per metric ton, then the Japanese duty represents 30 per cent of the Canadian price.

There is also a global quota, imposed on imports into Japan of rapeseed oil. The actual size of this quota was not revealed by the Japanese. Further to the duty and the quota, imports of rapeseed oil are also governed by the regulations of the Japanese Food Sanitation Law. It appears evident that the Japanese would prefer to import the seed rather than the oil.

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[1] Average wholesale price paid to crushers by processors as of February, 1969. Source: Course Grains Quarterly, February, 1969.

WORLD PRODUCTION OF OILS AND FATS

The United States Department of Agriculture forecast that the world production of oils and fats in 1969 will reach 41 million short tons.[1] This is an all time high for the eleventh consecutive year. The expected percentage increase over 1968 is only one per cent and is considerably less than the rate of increase in previous years.

The estimated increase of 250,000 tons in 1969 is due to increases in all categories except the edible oils. This is a departure from the pattern of previous years when the major portion of the increase occurred in the edible oil section. Due to the action of the United States government a large quantity of soybeans will be withdrawn from the market under the support program and thus the U.S. production of soybean oil will show only a slight increase. There will be a smaller but near record output of sunflower oil, second only to last year's record levels.

The United States will, in 1969, produce at least one quarter of the world production of all major oils and fats. However production of edible vegetable oils in 1969 is estimated at 19.4 million tons or two per cent less than in 1968. All oils except cottonseed, soybean, and corn oil are are expected to decline from 1968 levels. Rapeseed, sesame, and olive oils will only show a slight reduction. The production of rapeseed oil in 1969 may decline by as much as 50,000 tons, a decline of 2.8 per cent from last year's record level of 1.84 million tons.

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[1] World Agricultural Production and Trade, Statistical Report, United States Department of Agriculture, Foreign Agricultural Service, January, 1969, Washington, D.C., p.5

Table 28

ESTIMATED WORLD PRODUCTION OF OILS AND FATS -- Annual 1963-68, Forecast 1969 (1)

(thousands of short tons)

Commodity	1963	1964	1965	1966	1967	1968(2)	Forecast 1969
Edible Vegetable Oils (3):							
Cottonseed	2,595	2,685	2,750	2,700	2,395	2,455	2,655
Peanut	3,005	3,130	3,325	3,205	3,310	3,455	3,135
Soybean	4,290	4,360	4,585	5,050	5,340	5,565	5,615
Sunflowerseed	2,590	2,365	3,120	3,100	3,485	3,815	3,615
Rapeseed	1,190	1,240	1,670	1,545	1,745	1,845	1,795
Sesameseed	610	615	670	620	625	640	630
Safflowerseed	245	195	230	235	300	250	215
Olive oil (4)	1,020	1,875	1,095	1,355	1,350	1,480	1,470
Corn oil	240	255	270	275	275	280	280
Totals	15,785	16,720	17,715	18,085	18,825	19,785	19,410
Palm oils (6):							
Coconut	2,420	2,435	2,360	2,500	2,275	2,150	2,350
Palm kernel	455	455	460	445	375	390	410
Palm	1,315	1,320	1,335	1,385	1,235	1,395	1,525
Babassu kernel (7).	50	57	60	73	57	75	75
Totals	4,240	4,267	4,215	4,403	3,942	4,010	4,360
Industrial oils (3):							
Linseed	1,140	1,175	1,155	1,215	1,055	920	1,105
Castor	320	395	370	365	335	405	435
Oiticica	6	19	13	20	2	10	8
Tung	125	153	160	140	158	132	157
Totals	1,591	1,742	1,698	1,740	1,550	1,467	1,705

(Continued) ...

	1963	1964	1965	1966	1967	1968(2)	Forecast 1969
			(thousands of short tons)				
Animal Fats:							
Butter (fat content)	4,375	4,455	4,740	4,650	4,835	5,100	5,000
Lard (8)	4,005	4,165	4,380	4,235	4,360	4,420	4,480
Tallow and grease	4,085	4,295	4,190	4,330	4,430	4,570	4,620
Totals	12,465	12,915	13,310	13,215	13,625	14,090	14,100
Marine Oils:							
Whale	295	249	218	126	112	100	105
Sperm whale	149	165	170	161	164	150	150
Fish (including liver)	680	839	865	975	1,071	1,125	1,150
Totals	1,124	1,253	1,253	1,262	1,347	1,375	1,405
Estimated World Totals	35,205	36,897	38,191	38,705	39,289	40,727	40,980

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(1) Years indicated are those in which the predominant share of the given oil was produced from its related raw material. (2) Preliminary. (3) Estimates of U.S. oil production include actual oil produced plus the oil equivalent of exported oilseeds; estimates for other countires are based upon the production of various oilseeds times the estimated normal proportions crushed for oil. (4) Excludes sulfur oil. (5) 1960-63 average.
(6) Estimated on the basis of exports and information available on consumption in the various producing areas.
(7) Mill production only. (8) Rendered lard only in most countries.

Source: Coarse Grains Quarterly, Dominion Bureau of Statistics.

Table 29

WORLD NET EXPORTS OF OILSEEDS, OILS AND FATS, PRIMARILY FOR FOOD

(thousand short tons)

	1963	1964	1965	1966
Edible Vegetable				
Soybeans	5,769	6,922	7,592	8,192
Soybean oil	561	650	615	440
Total, as oil	1,600	1,895	1,981	1,914
Cottonseed	539	386	462	407
Cottonseed oil	218	358	342	172
Total, as oil	304	421	417	237
Peanuts	1,613	1,586	1,437	1,586
Peanut oil	364	385	410	458
Total, as oil	1,073	1,082	1,043	1,156
Rapeseed	321	335	594	668
Rapeseed oil	26	25	71	114
Total, as oil	151	157	302	374
Sunflowerseed	212	338	279	335
Sunflower oil	357	250	331	464
Total, as oil	429	380	438	592
Sesame	181	191	158	171
Sesame, as oil	85	89	74	80
Olive oil	164	203	119	184
Totals: seed	8,634	9,757	10,522	11,358
vegetable oils	1,691	1,871	1,886	1,832
Combined, as oil	3,806	4,227	4,373	4,537
Palm				
Copra	1,624	1,547	1,547	1,583
Coconut oil	421	468	435	512
Total, as oil	1,460	1,452	1,427	1,525
Palm kernels	756	732	711	681
Palm kernel oil	46	56	62	94
Total, as oil	401	400	396	413

(continued) ...

	1963	1964	1965	1966
Palm oil	574	614	589	613
Totals: seed	2,380	2,279	2,258	2,264
vegetable oils	1,041	1,132	1,086	1,219
Combined, as oil	2,435	2,466	2,411	2,551
Animal fats, edible				
Butter (82%)	579	577	540	559
Lard (1)	443	510	321	299
Total	1,022	1,090	861	857
Marine oils, edible				
Whale oil (production)	294	249	218	138
Fish oils	452	429	496	561
Total	746	678	714	699
World Totals				
Oilseeds (actual weight)	11,015	12,036	12,780	13,622
Vegetable oils	2,732	3,003	2,972	3,050
Animal and marine	1,768	1,768	1,575	1,556
Grand total (oil basis)	8,009	8,461	8,359	8,644

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(1) Includes negligible amounts of edible tallow.

Source: Fats and Oils in Canada, Department of Industry,
Food Products Branch, December, 1967.

Table 30

WORLD NET EXPORTS OF OILSEED CAKE AND MEAL, AND FISH MEAL

(thousands of short tons)

	1965				1966			
	Seed (1)	Meal	Total	Protein (2)	Seed (1)	Meal	Total	Protein (2)
Soybean	5,998	2,321	8,319	3,827	6,472	2,690	9,162	4,214
Cottonseed	319	1,289	1,608	659	281	1,299	1,530	648
Peanut	805	1,495	2,300	1,196	888	1,600	2,488	1,294
Rapeseed	338	80	419	151	380	122	503	181
Sunflowerseed	166	384	540	200	201	600	800	296
Sesame	82	46	128	51	89	43	132	53
Copra	541	412	953	209	554	413	968	213
Palm kernel	369	110	479	86	354	153	507	92
Linseed	399	709	1,189	428	526	573	1,099	396
Unspecified (3)	209(4)	343	552	180	198(4)	365	563	182
Total	9,226	7,261	16,487	6,986	9,943	7,858	17,802	7,567
Fish meal	-	2,387	2,387	1,552	-	2,646	2,646	1,720
Grand Total	9,226	9,648	18,874	8,537	9,943	10,504	20,448	9,288

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(1) Oilcake equivalents of oilseed net exports. (2) Average raw protein content of oilcake expeller meal. (3) except castor bean. (4) Mainly safflowerseed.

Source: Fats and Oils in Canada, Department of Industry,
Food Products Branch, December, 1967.

APPENDIX I

COMPARISON OF TRANSPORTATION CHARGES BETWEEN WESTERN AND EASTERN CANADIAN RAPESEED CRUSHERS

This appendix hopes to outline the present cost advantage of eastern rapeseed crushers over western crushers. Freight costs for each of the western plants have been calculated and are compared to the costs of a crusher operating in Toronto. In each of the following examples the costs are based on moving rapeseed from a growing area such as Wetaskiwin, Meota, Armley and Brandon to the crushing plants located at Lethbridge, Saskatoon, Nipawin and Altona. The corresponding costs for moving the same amount of rapeseed from the growing areas to Toronto have been included at the bottom of each page.

Each example is based on 100 pounds of rapeseed, or its equivalent 40 pounds of oil and 60 pounds of meal. As rapeseed and its meal are transported by the railways under the "Crow Rates", and the oil under Domestic or Normal rates, the calculation of total freight costs becomes very involved. One hundred pounds of rapeseed, grown in Wetaskiwin, and being moved to Lethbridge to be crushed would be treated as 60 pounds of meal to be accorded the "Crow Rate" and 40 pounds of oil to be charged at the Domestic rate. Because the "Crow Rate" was designed to move grains and rapeseed to export positions at ocean or lake ports, the meal receives this export rate only to Fort William. From there to Toronto it moves under a domestic rate. If the meal portion of the rapeseed were to be exported as rapeseed it would move directly from Wetaskiwin to Fort William, but as it goes to Lethbridge to be crushed it is charged for a stop-off for

milling-in-transit, and for the out of line haul (OLH), the difference in miles between Wetaskiwin-Lethbridge-Fort William and Wetaskiwin-Fort William. The 40 pounds of oil moves from Lethbridge to Toronto at domestic rates.

EXAMPLE OF FREIGHT COSTS ON RAPESEED ORIGINATING AT WETASKIWIN

Crushed at Lethbridge

Wetaskiwin to Lethbridge	40 lbs. @ .33	.1320
Wetaskiwin to Fort William on meal	60 lbs. @ .27 1/2	.1650
Stop-off for milling-in-transit, meal	60 lbs. @ .05 1/4	.0315
O.L.H. (226.8 miles)	60 lbs.	.0960
Meal, Fort William to Toronto	60 lbs. @ .80	.4800
Oil, Lethbridge to Toronto	40 lbs. @ 1.45	.5800
TOTAL		1.4845

Approximate Freight Costs - Crushed in
Toronto, 100 lbs. of Seed = 40 lbs. oil
60 lbs. meal

Wetaskiwin to Fort William	100 lbs. @ .27 1/2	.2750
Lakehead to Toronto		.4600
TOTAL		.7350

ADVANTAGE ON FREIGHT TORONTO OVER LETHBRIDGE	.7495

Note: This charge was based on LFT 2622, which has now lapsed.

APPENDIX 1

EXAMPLE OF FREIGHT COSTS ON RAPESEED ORIGINATING AT MEOTA

Crushed at Saskatoon

Meota to Saskatoon	40 lbs. @ .36	.1440
Meota to Fort William on meal	60 lbs. @ .25 1/2	.1530
Stop-off for milling-in-transit, meal	60 lbs. @ .0525	.0315
Meal, Fort William to Toronto	60 lbs. @ .80	.4800
Oil, Saskatoon to Toronto,	40 lbs. @ 1.33	.5320
TOTAL		1.3405

Approximate Freight Costs - Crushed in
Toronto, 100 lbs. of Seed =40 lbs. oil
60 lbs. meal

Meota to Fort William	100 lbs. @ .25 1/2	.2550
Lakehead to Toronto		.4600
TOTAL		.7150
ADVANTAGE ON FREIGHT TORONTO OVER SASKATOON		.6255

APPENDIX 1

EXAMPLE ON FREIGHT COSTS ON RAPESEED ORIGINATING AT ARMLEY

Crushed at Nipawin

Armley to Nipawin	100 lbs. @ .12	.1200
Nipawin to Fort William on meal	60 lbs. @ .23 1/2	.1410
Meal, Fort William to Toronto	60 lbs. @ .80	.4800
Oil, Nipawin to Toronto,	40 lbs. @ 1.33	.5320
TOTAL		1.2730

Approximate Freight Costs - Crushed in Toronto, 100 lbs. of Seed =40 lbs. oil
60 lbs. meal

Armley to Fort William	100 lbs. @ .23 1/2	.2350
Lakehead to Toronto		.4600
TOTAL		.6950
ADVANTAGE ON FREIGHT TORONTO OVER NIPAWIN		.5780

APPENDIX 1

EXAMPLE OF FREIGHT COSTS ON RAPESEED ORIGINATING AT BRANDON

Crushed at Altona

Brandon to Altona	40 lbs. @ .42	.1680
Brandon to Fort William on meal	60 lbs. @ .175	.1050
Stop-off for milling-in-transit, meal	60 lbs. @ .0525	.0525
O.L.H.	60 lbs. @ .0925	.0555
Meal, Fort William to Toronto	60 lbs. @ .7975	.4785
Oil, Altona to Toronto,	40 lbs. @ 1.03	.4120
TOTAL		1.2715

Approximate Freight Costs - Crushed in
Toronto, 100 lbs. of Seed =40 lbs. oil
60 lbs. meal

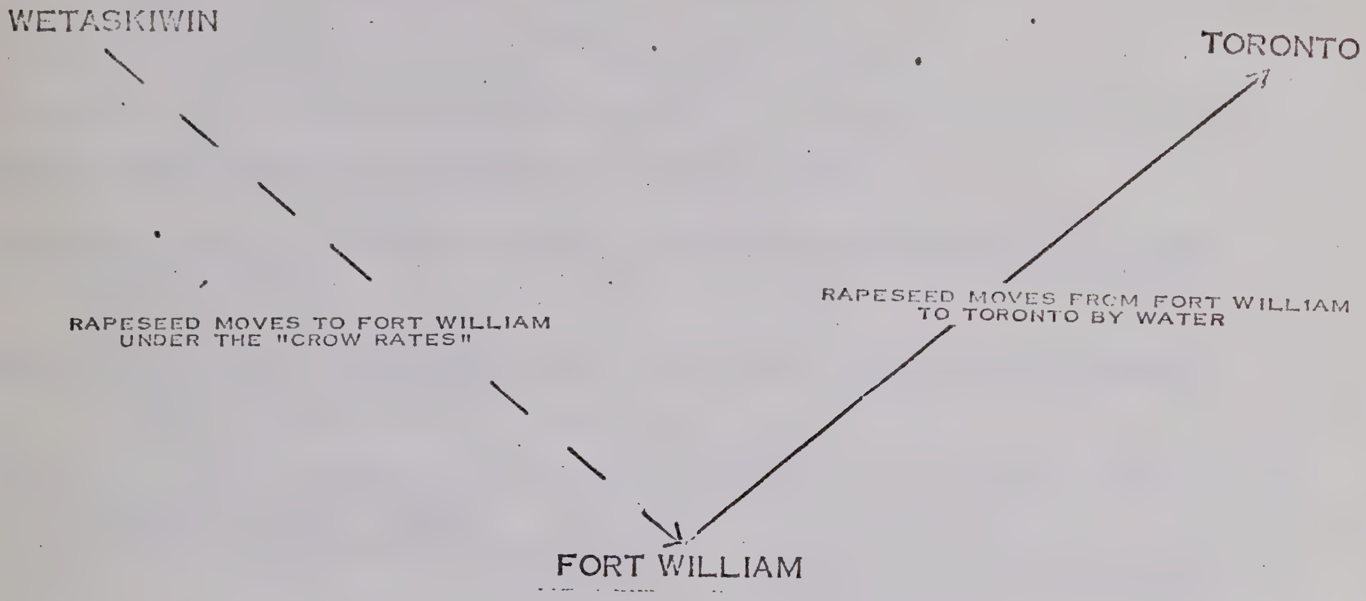
Brandon to Fort William	100 lbs. @ .175	.1750
Lakehead to Toronto		.4600
TOTAL		.6350
ADVANTAGE ON FREIGHT TORONTO OVER ALTONA		.6365

SOURCE: Alberta Freight Bureau.

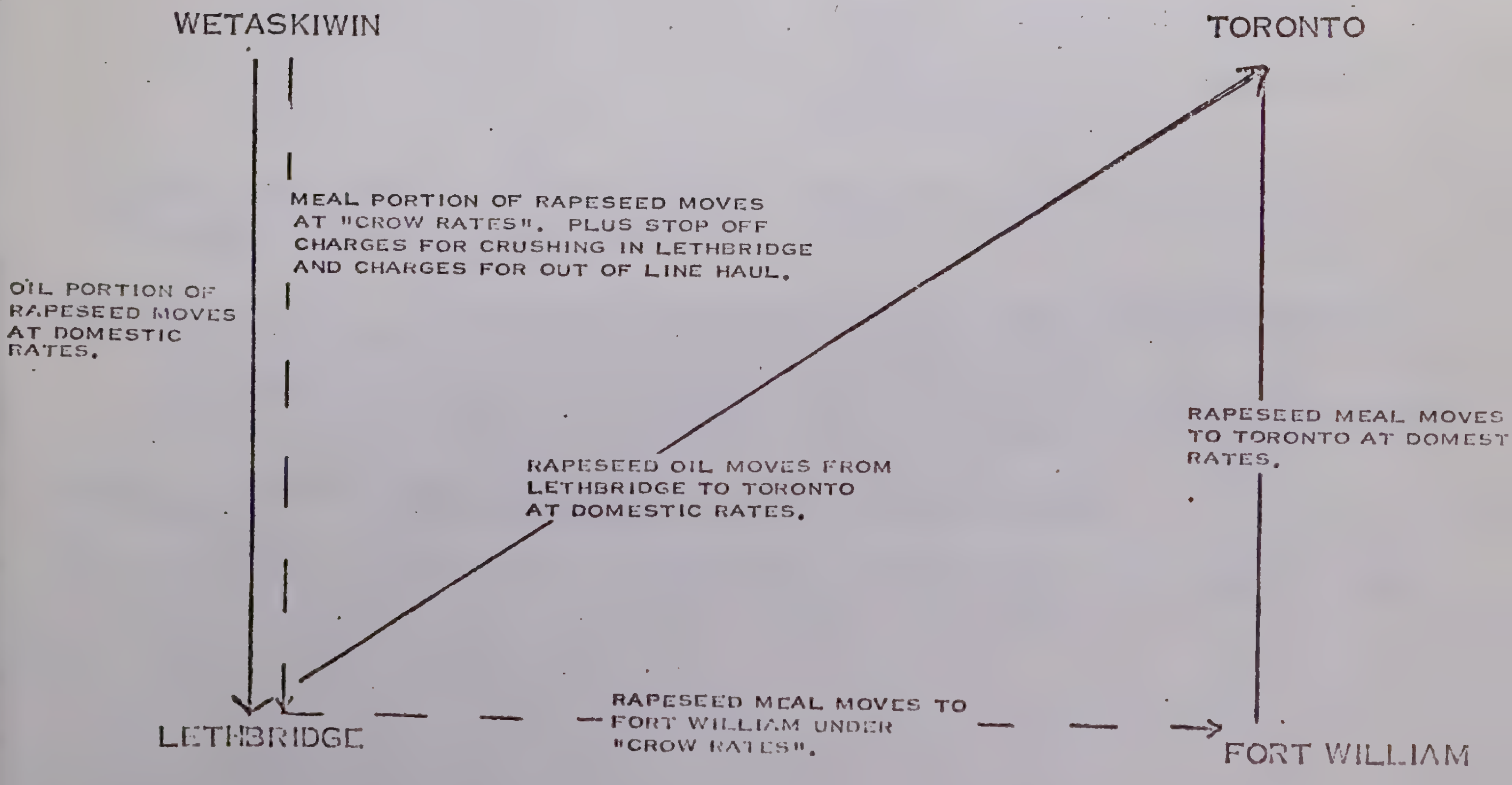
APPENDIX 2

SCHEMATIC DIAGRAM SHOWING THE MOVEMENT OF RAPESEED, RAPESEED OIL AND RAPESEED MEAL FROM ALBERTA TO TORONTO

Example 1: The Movement of Rapeseed, Grown at Wetaskiwin, to Toronto.


WETASKIWIN
TORONTO
RAPESEED MOVES TO FORT WILLIAM UNDER THE "CROW RATES"
RAPESEED MOVES FROM FORT WILLIAM TO TORONTO BY WATER
FORT WILLIAM

Example 2: The Movement of Rapeseed, Grown at Wetaskiwin and Crushed at Lethbridge, to Toronto.


WETASKIWIN
TORONTO
MEAL PORTION OF RAPESEED MOVES AT "CROW RATES". PLUS STOP OFF CHARGES FOR CRUSHING IN LETHBRIDGE AND CHARGES FOR OUT OF LINE HAUL.
OIL PORTION OF RAPESEED MOVES AT DOMESTIC RATES.
RAPESEED MEAL MOVES TO TORONTO AT DOMEST RATES.
RAPESEED OIL MOVES FROM LETHBRIDGE TO TORONTO AT DOMESTIC RATES.
LETHBRIDGE
RAPESEED MEAL MOVES TO FORT WILLIAM UNDER "CROW RATES".
FORT WILLIAM

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